aecia that were studied. In agreement with others he finds that the cells of the central arch of the peridium are the apical cells of the central spore chains that have, before their metamorphosis into peridial cells, cut off intercalary cells below. All of the cells of the peridium are therefore morphologically aeciospores. An apparent exception to this was found in *Peridermium Pini*. In the division of the peridium initial cells of the central arch the usual process is reversed and the small intercalary cell is cut off above and the peridial cell below. A brief description of the fertilization processes in this species is given. Equal cell fusions similar to those first described by CHRISTMAN were found.—F. D. FROMME.

Reciprocal crosses of Oenothera.—DAVIS[13] has reported a partial confirmation of the results obtained by DE VRIES from reciprocal crosses between *Oenothera biennis* L. and *O. muricata* L. The observations of DAVIS also include reciprocal crosses between *O. biennis* L. and *O. franciscana* Bartlett, between *O. biennis* and *O. grandiflora* Solander, and between *O. muricata* L. and *O. gigas* De Vries. Detailed, parallel descriptions are given of the parents and of the pairs of reciprocals, together with numerous photographs of the plants in various stages of their growth. Except in the case of the *gigas-muricata* crosses, the reciprocals of which were in general without important distinguishing characters, the reciprocal crosses exhibited striking contrasting differences. In most respects the crosses closely resembled the pollen parent (patroclinous), as had been noted earlier by DE VRIES for one of these crosses, but strong matroclinous tendencies were also observed, particularly in certain features of the inflorescence of the *biennis-muricata* crosses. Red coloration was found to be wholly or partially dominant without respect to whether it was contributed by the paternal or maternal parent. Moreover, in all the crosses observed by DAVIS, even where patroclinous and matroclinous tendencies were most conspicuous, the influence of both parents was plainly recognizable. He has "observed no certain evidence that a morphological character of either species in a cross is passed on to the F_1 hybrids exactly as it is represented in one or the other of the parents." This fact, DAVIS notes, would render untenable GOLDSCHMIDT's assumption of merogony, even though that explanation had not been made doubtful by the cytological data of RENNER. No satisfactory explanation of these results has been suggested.—R. A. EMERSON.

Transpiration in succulent plants.—DELF[14] has made an interesting study of the transpiration peculiarities of the different classes of succulent plants, having carried on a number of experiments and having endeavored to organize

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[13] DAVIS, BRADLEY MOORE, Genetical studies on *Oenothera*, V. Zeitsch. Ind. Abst.- u. Vererbungslehre **12**:169–205. 1914.

[14] DELF, E. MARION, Transpiration in succulent plants. Ann. Botany **26**:409–442. 1912.